The international journal & abstracting service for Vacuum Sciences & Technology

VACUUM

SURFACE ENGINEERING, SURFACE INSTRUMENTATION & VACUUM TECHNOLOGY

Volume 69, 2003

PERGAMON

PERGAMON

Vacuum 69 (2003) III–VII

VACUUM
SURFACE ENGINEERING, SURFACE INSTRUMENTATION & VACUUM TECHNOLOGY

www.elsevier.com/locate/vacuum

Contents

Volume 69 Numbers 1–3

AUTHORS		ARTICLES
N Guerassimov, D Karpuzov	1	Editorial
B Rauschenbach	3	Ion beam assisted deposition—a processing technique for preparing thin films for high-technology applications
M G Blamire, D-J Kang, G Burnell, N H Peng, R Webb, C Jeynes, J H Yun, S H Moon and B Oh	11	Masked ion damage and implantation for device fabrication
S S Tinchev	17	Application of ion beam techniques in superconducting electronics
P Eh Hovsepian and W-D Münz	27	Recent progress in large-scale production of nanoscale multilayer/superlattice hard coatings
A Bogaerts and R Gijbels	37	Numerical modelling of gas discharge plasmas for various applications
Z H Barber, C Christou, K-F Chiu and A Garg	53	The measurement and control of ionization of the depositing flux during thin film growth
N S McIntyre, R D Davidson, G Kim and J T Francis	63	New frontiers in X-ray photoelectron spectroscopy
L Bischoff, J Teichert, S Kitova and T Tsvetkova	73	Optical pattern formation in a-SiC:H films by Ga^+ ion implantation
P Danesh, B Pantchev, I Savatinova, E Liarokapis, S Kaschieva and A G Belov	79	Electron irradiation of a-Si:H films prepared from hydrogen-diluted silane
P Danesh, B Pantchev, I Savatinova, E Liarokapis and B Schmidt	83	Effect of ion implantation on the structural properties of a-Si:H films
S Kaschieva and S N Dmitriev	87	Influence of the ambient on radiation-induced effects during high-energy electron irradiation of MOS structures
M Peikert, E Wieser, H Reuter and C Wenzel	91	Enhanced thermal stability of TA-based thin diffusion barriers by ion implantation
G Zollo	97	XHRTEM observations of different damage structures in high temperature Zn^+ implanted GaAs
S Alexandrova, S Kaschieva, E Halova, E Valcheva and A Szekeres	103	Sensitivity of hydrogen plasma-treated SiO_2/Si structures to high-energy electron irradiation
S Balabanov, K Velitchkova and K Krezhov	107	Photoluminescence of carbon-implanted ultra-high molecular weight polyethylene composite and its modification by gamma irradiation

PII: S0042-207X(02)00776-5

K Krezhov, K Velitchkova and S Balabanov	**113**	Transport properties of selenium implanted polymer composites
L I Pavlov, Ch V Angelov, V Mikli, B G Amov and A E Djakov	**119**	Microstructural changes and optical properties of laser annealed bismuth-implanted silicon
P C Russell, B E Djakov, R Enikov, D H Oliver and G R Jones	**125**	Chromatic monitoring of plasma jets used for plasma spraying
B E Djakov and V Hermoch	**129**	Plasma jet formation at the electrodes of pulsed arcs
P Huber, D Manova, S Mändl and B Rauschenbach	**133**	Homogeneity of metal plasma immersion ion implantation and deposition
B Fritsche, T Chevolleau, J Kourtev, A Kolitsch and W Möller	**139**	Plasma diagnostic of an RF magnetron Ar/N_2 discharge
N Djermanova, Zh Kiss'ovski, St Kolev, H Schlüter, A Shivarova and Kh Tarnev	**147**	Probe diagnostics of waveguided discharges in an external magnetic field
St Lishev, L Marinova, H Schlüter and A Shivarova	**153**	Filamentation regime of travelling-wave-produced plasmas
F M Dias and Tsv K Popov	**159**	Iterative method of evaluating the electron energy distribution function from probe measurements under collisional conditions
I M Rusinov, A B Blagoev and V I Dimitrov	**165**	Diffusion model of the transport of sputtered metal atoms in a cylindrical vessel
V Guerra, E Tatarova and C M Ferreira	**171**	Kinetics of metastable atoms and molecules in N_2 microwave discharges
J Henriques, E Tatarova, V Guerra and C M Ferreira	**177**	Nitrogen dissociation in N_2–Ar microwave plasmas
C M Ferreira, E Tatarova, F M Dias, V Guerra, J Henriques and M Pinheiro	**183**	Wave driven molecular discharges as sources of active species
E Tatarova, F M Dias, H van Kuijk and C M Ferreira	**189**	Emission spectroscopy of a surface wave sustained N_2–H_2 discharge
S Simeonov, I Yourukov, A Szekeres and E Kafedjiiska	**195**	RF hydrogen-plasma-induced defects in p-Si/SiO_2 structures with submicron thermally grown oxides
S Gateva, M Janossy and S Cartaleva	**201**	Optogalvanic effect sign change of the 667.8 nm He line in a hollow cathode discharge plasma
E Balabanova	**207**	Nanoparticle production under conditions of a non-isothermal aerosol flow reactor
A Salabas, G Gousset and L L Alves	**213**	Charged particle transport modelling in silane–hydrogen radio-frequency capacitively coupled discharges
M Nikolaeva, M Sendova-Vassileva, D Dimova-Malinovska, D Karpuzov, J C Pivin and G Beshkov	**221**	Iron silicide formed in a-Si:Fe thin films by magnetron co-sputtering and ion implantation
D Dimova-Malinovska and M Nikolaeva	**227**	Transport mechanisms and energy band diagram in ZnO/porous Si light-emitting diodes
M Nikolaeva, M Sendova-Vassileva, D Dimova-Malinovska and J C Pivin	**233**	Optical properties and room-temperature photoluminescence from Tb^{3+} ions in a-$Si_{1-x}C_x$:H thin films

I Hotový, J Huran, L Spiess, J Liday, H Sitter and Š Haščík	**237**	The influence of process parameters and annealing temperature on the physical properties of sputtered NiO thin films
T Donchev, V Tsaneva, T Nurgaliev, L Gravier, J Ph Ansermet, I Petrov, V Petrova, V W Matz, R Groetzschel, S Pignard and H Vincent	**243**	YBCO/LSMO and LSMO/YBCO double-layer deposition by off-axis magnetron sputtering and strain effects
E S Vlakhov, T I Donchev, A Y Spasov, K Dörr, K A Nenkov, A Handstein, S Pignard and H Vincent	**249**	Structural and magnetotransport properties of magnetron sputtered $La_{0.7}Sr_{0.3}MnO_3$ thin films
E S Vlakhov, K A Nenkov, T I Donchev and A Y Spasov	**255**	Influence of misfit stress on the structure and magnetoresistive properties of magnetron sputtered $La_{0.7}Sr_{0.3}MnO_3$ thin films on $LaAlO_3$(1 0 0) substrate
V N Tsaneva, Tsv K Popov, F M Dias, E J Tarte, M G Blamire, J E Evetts and Z H Barber	**261**	Optical emission spectroscopy and Langmuir probe characterisation of the plasma during high-pressure sputter deposition of high-T_c superconducting $YBa_2Cu_3O_{7-x}$ thin films
V N Tsaneva, N A Stelmashenko, I N Martev, Z H Barber and M G Blamire	**267**	Characterisation of the optical emission of the plasma plume during pulsed laser deposition of superconducting MgB_2 thin films
A Og Dikovska, P A Atanasov, R I Tomov, S H Tonchev and D Ts Sapundjiev	**273**	Er:Y_2O_3 thin films grown by pulsed laser deposition
Š Gaži, M Španková, Š Chromik, I Vávra, V Štrbík, P Gierlowski, S J Lewandowski and Š Beňačka	**277**	The influence of the CeO_2 buffered r-sapphire microstructure on the quality of the YBCO films determined by microwave measurements
Š Haščík, Ž Mozolová, T Lalinský, M Tomáška and I Kostič	**283**	Patterning of a micromechanical coplanar waveguide using a dry etching technique
B Pantchev, P Danesh, U Kreissig and B Schmidt	**289**	Elastic recoil detection analysis of ion-exchanged soda-lime glass substrates for a-Si:H devices
N Bundaleski, M Radovic and Z Rakocevic	**295**	Influence of primary beam profile on LEIS spectra
G Beshkov, S Lei, V Lazarova, N Nedev and S S Georgiev	**301**	IR and Raman absorption spectroscopic studies of APCVD, LPCVD and PECVD thin SiN films
V A Ignatova, L Van Vaeck, R Gijbels and F Adams	**307**	Capabilities and limitations of Fourier transform laser microprobe mass spectrometry for molecular analysis of solids
K Grigorov, V Tsaneva, A Spasov, W Matz, R Groetzschel and H Reuther	**315**	RBS and ion channelling study of YBCO/STO and YBCO/LSMO/STO structures. Oxygen content estimated by X-ray diffraction
Y Sarov, M Nikolaeva, M Sendova-Vassileva, D Malinovska and J C Pivin	**321**	Optical properties of SiO_2 thin layers with Ag nanoparticles
R Georgieva, D Karashanova and N Starbov	**327**	Preparation and properties of vacuum deposited AgBr thin films
W Knapp and D Schleussner	**333**	Carbon Buckypaper field emission investigations
W Knapp, D Schleussner, A S Baturin, I N Yeskin and E P Sheshin	**339**	CRT lighting element with carbon field emitters
W Knapp, L Bischoff and J Teichert	**345**	Formation of a nano-emitter for electron field emission on a liquid metal ion source tip after solidification of the alloy

Š Chromik, Š Benacka, S Gaži, V Štrbík, Zs Őszi and I Kostič	**351**	Superconducting properties of MgB_2 thin films prepared by sequential deposition of boron and magnesium
A Szekeres, A Paneva, S Alexandrova, I Lisovskyy, V Litovchenko and D Mazunov	**355**	Optical study of ultrathin SiO_2 grown on hydrogenated silicon
E Morales-Sánchez, E F Prokhorov, A Mendoza-Galván and J González-Hernández	**361**	Electrical characterization of sputtered Ge:Sb:Te films using impedance measurements
S Sainov and R Stoycheva-Topalova	**365**	Temperature dependence of holographic recording in 15 nm As_2S_3 film
P Vitanov, A Harizanova, T Ivanova, D Velkov and Zd Raytcheva	**371**	Deposition, structure evolution and dielectric properties of $BaTiO_3$ and $Ba_xSr_{1-x}TiO_3$ thin films prepared by the sol–gel method
V Lazarova, Ts Yordanov, L Spassov and G Beshkov	**379**	Vacuum rapid thermal annealing of quartz resonators
S Alexandrova, A Szekeres, E Halova and M Modreanu	**385**	LPCVD-silicon oxynitride films: low-temperature annealing effects
S Alexandrova, P Danesh and I A Maslyanitsyn	**391**	SHG and AFM study of PECVD a-Si:H films
J Dikova, P Sharlandjiev, P Gushterova and Tz Babeva	**395**	Photoinduced changes in the optical properties of obliquely deposited a-As_2S_3 thin films
P Sharlandjiev and P Gushterova	**399**	Optical characteristics of very thin films
S Kitova, V Rashkova and I Konstantinov	**405**	Thin films of cobalt oxides obtained by vacuum co-deposition of Co and TeO_2
L A Vulkova, I S Atanasov and O I Yordanov	**411**	Comparison of numerical algorithms for simulation of molecular beam epitaxy
M Baleva and M Surtchev	**419**	Structural and optical characterization of laser-deposited PbTe films on silicon substrates
M Baleva, E Goranova, V Darakchieva, S Kossionides, M Kokkosis and P Jordanov	**425**	Influence of grain size on the optical conductivity of β-$FeSi_2$ layers
Ch Akhmadaliev, L Bischoff, J Teichert and K Kazbekov	**431**	Ion acoustic microscope based on IMSA-100 focused ion beam system
T Nurgaliev, S Miteva, T Donchev, A Spasov, D Dew-Hughes and D Edwards	**437**	Preparation of YBCO resonators and their characterization in combination with the ferrite components
J W Spencer, D W Yuan and G R Jones	**441**	An application of chromatic processing for interpreting data from a mass spectrometer
N Donkov, Z Dinkov and K Ivanov	**445**	Ion source with hot filament and magnetic field. Model-based anode current control
V Darakchieva, M Surtchev, E Goranova and M Baleva	**449**	Effect of rapid thermal annealing on the structure of ion beam synthesized β-$FeSi_2$
P Bankov, M Kalitzova, D Karpuzov, G Zollo, G Vitali, C Pizzuto, Ch Angelov, J Faure and L Kilian	**455**	Dose-dependent dynamics of nanocluster distribution in silicon implanted with Te^+ and Pb^+ ions: computer simulation and TEM study

Volume 69 Number 4

Wu Yuguang, Z Tonghe, L Andong, Z Xu and Z Gu	**461**	Properties of implanted PET by W ion using MEVVA implantation
W Miao, K Tao, X Liu, B Li and B Liu	**467**	Quantitative depth profiling of Al_3Hf phase formed by Hf ions implantation into aluminum
G Du, J Wang, X Wang, X Jiang, S Yang, Y Ma, W Yan, D Gao, X Liu, H Cao, J Xu and R P H Chang	**473**	Influence of annealing on ZnO thin film grown by plasma-assisted MOCVD
R A Nevshupa, J L de Segovia, A G Peressadko and E A Deulin	**477**	Dynamical model of total and partial pressures in a vacuum system due to intermittent desorption
Y Yu, X Qin, B Huang, J Wei, H Zhou, J Pan, W Chen, Y Qi, X Zhang and Z Ren	**489**	MOCVD growth of strain-compensated multi-quantum wells light emitting diode
S Kundoo, K K Chattopadhyay, A N Banerjee and S K Nandy	**495**	Synthesis and optical characterization of amorphous carbon nitride thin films by hot filament assisted RF plasma CVD
Y Ishikawa and V Nemanič	**501**	An overview of methods to suppress hydrogen outgassing rate from austenitic stainless steel with reference to UHV and EXV
R G Song, K Zhang and G N Chen	**513**	Electron beam surface treatment. Part I: surface hardening of AISI D3 tool steel
R G Song, K Zhang and G N Chen	**517**	Electron beam surface treatment. Part II: microstructure evolution of stainless steel and aluminum alloy during electron beam rapid solidification
A L Kholmetskii, V M Anischik, V V Uglov, D P Rusalsky, A K Kuleshov and J A Fedotova	**521**	CEMS investigations of AISI M2 steel after ion implantation by nitrogen, boron and carbon
D Depla and R De Gryse	**529**	Target voltage measurements during DC sputtering of silver in a nitrogen/argon plasma
A Kadoun, R Belkorissat, B Khelifa and C Mathieu	**537**	Comparative study of electron beam–gas interaction in an SEM operating at pressures up to 300 pa
M A Redwan, E H Aly, L I Soliman, A A El-Shazely and H A Zayed	**545**	Characteristics of n-$Cd_{0.9}Zn_{0.1}S$/p-CdTe heterojunctions
N Matsumoto and T Mieno	**557**	Characteristics of heat flux of $\boldsymbol{J} \times \boldsymbol{B}$ gas-arc discharge for the production of fullerenes
W Steckelmacher	**563**	Book review
	III	VOLUME CONTENTS
	VIII	AUTHOR INDEX
	XI	VACUUM DIARY